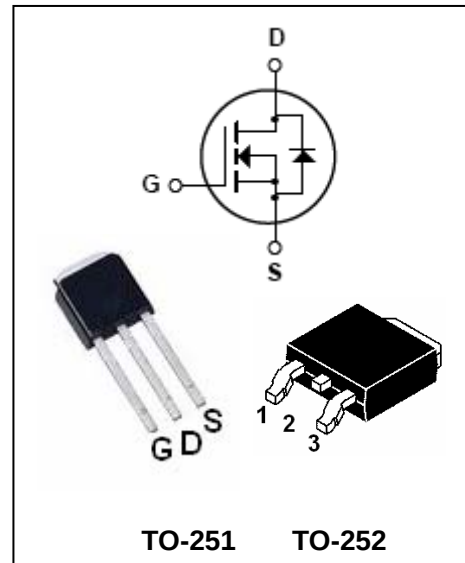


2A, 650 Volts N-CHANNEL POWER MOSFET

2N65

FEATURES

- $R_{DS(on)}=5.0\Omega@V_{GS}=10V$.
- Ultra Low gate charge (typical 9.0nC) Lead-free
- Low reverse transfer capacitance (C_{rss} = typical 5.0 pF)
- Fast switching capability
- Avalanche energy specified
- Improved dv/dt capability, high ruggedness



MAXIMUM RATING operating temperature range applies unless otherwise specified

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source voltage	650	V
I_D	Drain current continuous	2.0	A
I_{DM}	Drain current Pulsed (Note2)	8.0	A
V_{GSS}	Gate -Source voltage	± 30	V
I_{AR}	Avalanche Current (Note2)	2.0	A
E_{AR}	Avalanche Energy Repetitive(Note 2)	4.5	mJ
E_{AS}	Avalanche Energy Single Pulse(Note 3)	140	mJ
dv/dt	Peak Diode Recovery dv/dt (Note4)	4.5	V/ns
P_D	Power Dissipation	35	W
T_J	Junction Temperature	+150	°C
$T_{OPR} T_{STG}$	Operating and Storage Temperature	-55 ~ +150	°C
θ_{JA}	Thermal Resistance Junction-Ambient	50	°C/W
θ_{Jc}	Thermal Resistance Junction-Case	2.87	°C/W

Note:1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.



2A, 650 Volts N-CHANNEL POWER MOSFET

2N65

2. Repetitive Rating: Pulse width limited by maximum junction temperature
3. $L=64\text{mH}$, $I_{AS}=2.0\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\ \Omega$, Starting $T_J = 25^\circ\text{C}$
4. $I_{SD} \leq 2.4\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^\circ\text{C}$

ELECTRICAL CHARACTERISTICS@ $T_a=25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	650	-	-	V
Breakdown Voltage Temperature Coefficient	Δ BV _{DSS} / Δ T _J	I _D =250UA	-	0.4	-	V/°C
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V	-	-	1	μA
Gate-body Leakage	I _{GSS}	V _{DS} =0V, V _{GS} =30V	-	-	100	nA
Forward Reverse		V _{DS} =0V, V _{GS} =-30V	-	-	-100	
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.0	-	4.0	
Static drain-Source on-resistance	R _{DS(ON)}	V _{GS} =10V, I _D =1A,	-	4.2	5.0	Ω
DYNAMIC CHARACTERISTICS						
Forward transconductance	g _{FS}	V _{DS} =50V, I _D =1A (Note1)	-	2.25	-	S
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	270	350	pF
Output Capacitance	C _{oss}		-	40	50	pF
Reverse Transfer Capacitance	C _{rss}		-	5	7	pF
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{d(on)}	V _{DD} =325V, I _D =2.4A, R _G =25Ω (Note1,2)	-	10	30	ns
Turn-On Rise Time	t _R		-	25	60	ns
Turn-Off Delay Time	t _{d(off)}		-	20	50	ns
Turn-Off Fall Time	t _f		-	25	60	ns
Total Gate Charge	Q _g	V _{DS} =520V, I _D =2.4A, V _{GS} =10V (Note1,2)	-	9.0	11	nC
Gate-Source Charge	Q _{gs}		-	1.6	-	nC
Gate-Drain Charge	Q _{gd}		-	4.3	-	nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I _{SD}		-	-	2.0	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}		-	-	8.0	A
Drain-Sourse Recovery Charge	V _{SD}	V _{GS} =0V, I _{SD} =2.0A	-	-	1.5	V
Reverse Recovery Time	t _{rr}	V _{GS} =0V, I _{SD} =2.4A,	-	180	-	ns
Reverse Recovery Charge	Q _{rr}	dI _F /dt=100A/us (Note1)	-	0.72	-	μ C

Notes:

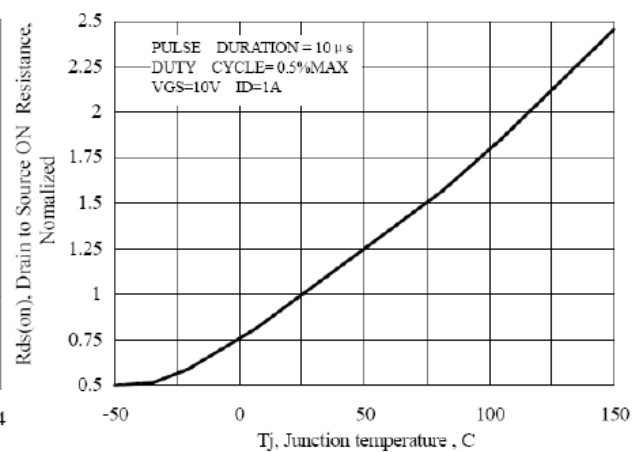
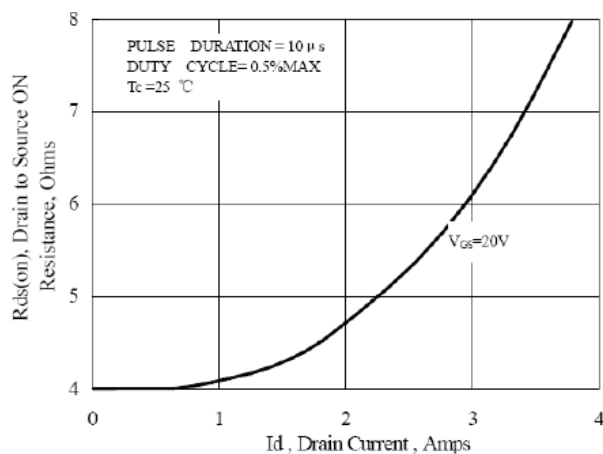
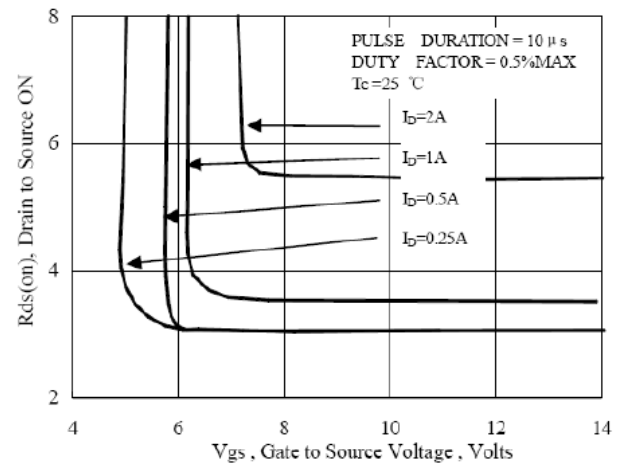
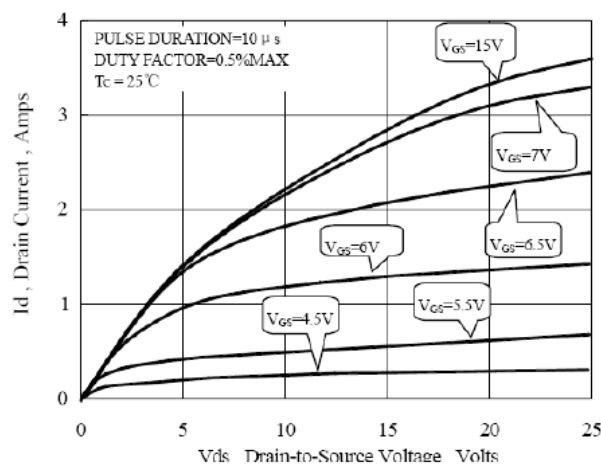
1. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

2A, 650 Volts N-CHANNEL POWER MOSFET

2N65

2. Essentially Independent of Operating Temperature

TYPICAL CHARACTERISTICS @ $T_a=25^\circ\text{C}$ unless otherwise specified



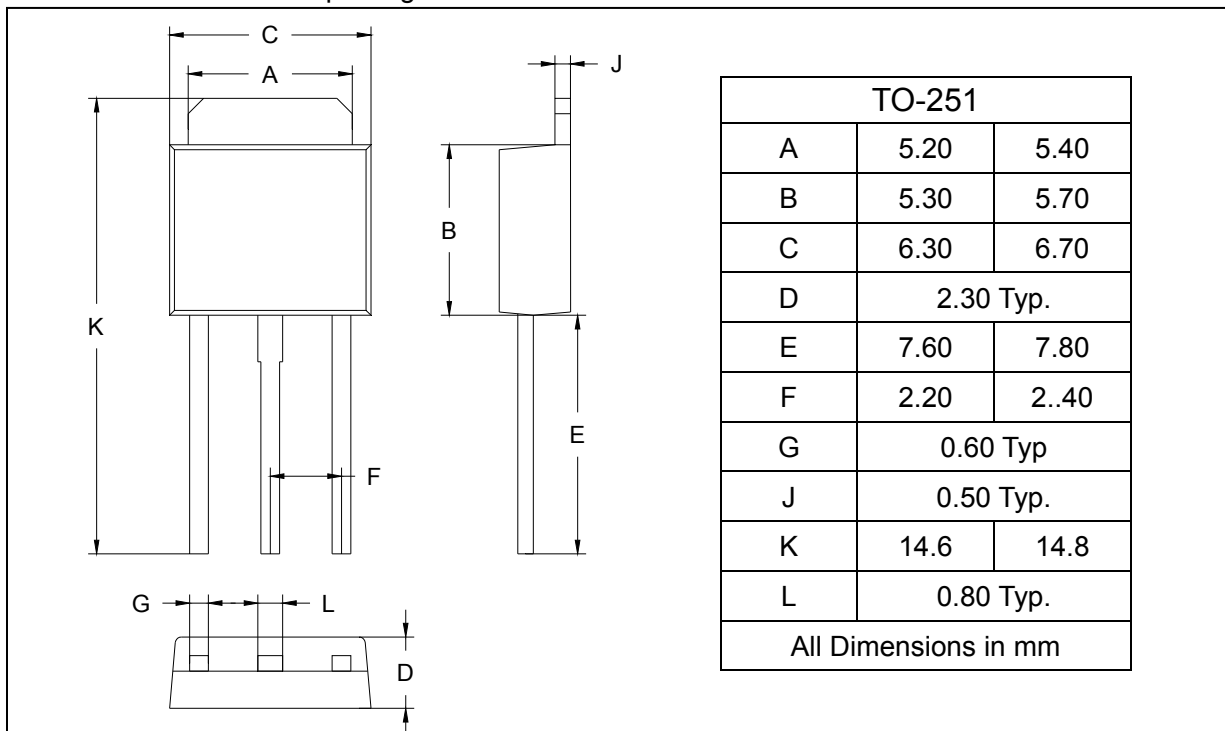
2A, 650 Volts N-CHANNEL POWER MOSFET

2N65

PACKAGE OUTLINE

Plastic surface mounted package

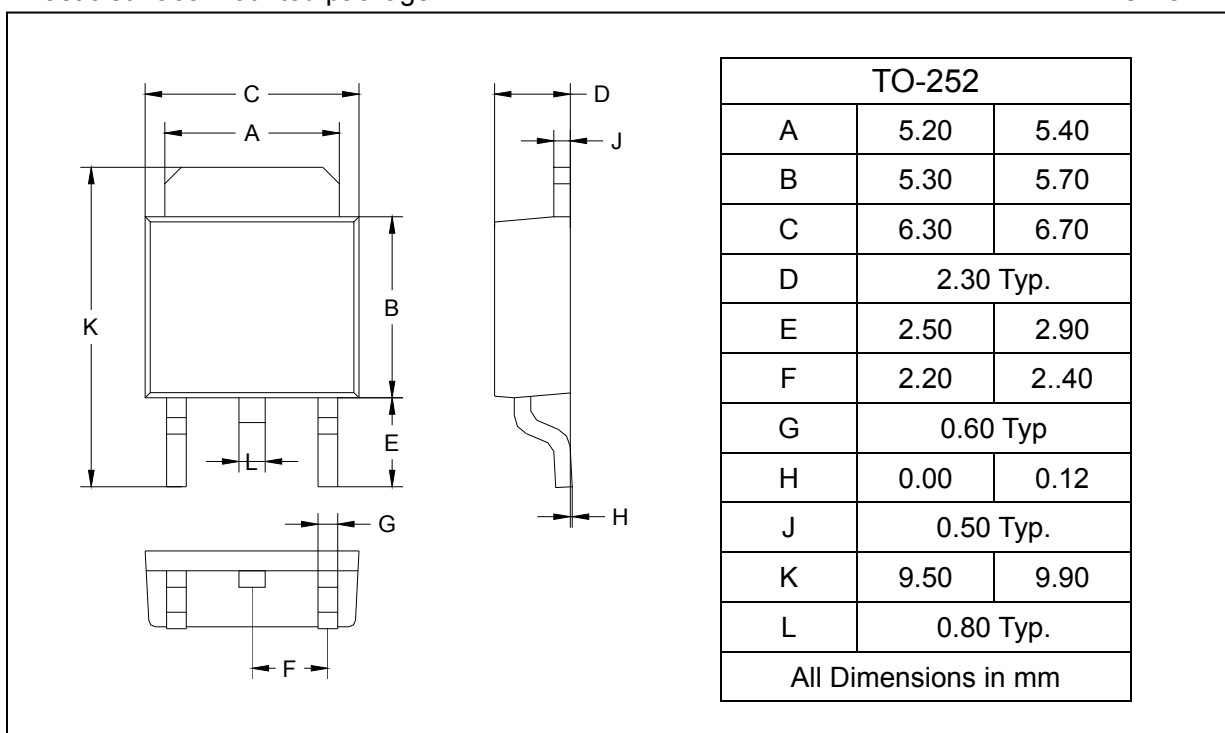
TO-251



PACKAGE OUTLINE

Plastic surface mounted package

TO-252

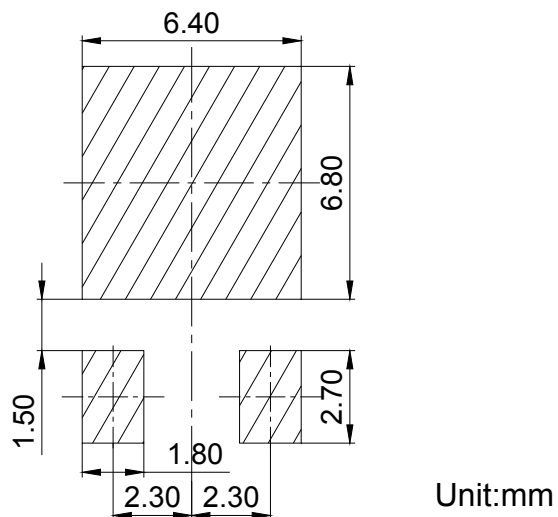




2A, 650 Volts N-CHANNEL POWER MOSFET

2N65

SOLDERING FOOTPRINT



PACKAGE INFORMATION

Device	Package	Shipping
2N65	TO-251/252	80PCS/Tube
	TO-252	2500PCS/Tape&Reel